

PATENT APPLICATION TRANSMITTAL LETTER

Case Docket No.: M-95-3195-U.17-CIP

To:

THE COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231-9998

Transmitted herewith for filing if the patent application of

INVENTOR: Carlos Neto MENDES

FOR: "FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION MACHINE and CONFIGURATION OF A PERFORATING FILTERING TUBE FOR THE EXTRACTION OF FRUIT JUICES and CONFIGURATION OF A CONCAVE AND RADIALY CUT HEMISPHERE FOR THE CUTTING AND PRESSING OF FRUIT FOR THE EXTRACTION OF JUICE"

Enclosed are:

(XX) TWELVE (12) Sheets of Drawing (FIGURES 1 - 17).

() An assignment of the invention to _____

() A certified copy of a _____ application.

() An associate power of attorney.

(XX) A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27.

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PATENT APPLICATION TRANSMITTAL LETTER
Page 2 of 2

Attorney Docket No.: M-95-3195-U.17-CIP

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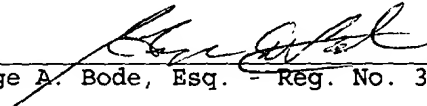
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February 23, 1998
Date


George A. Bode
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George A. Bode, Esq. - Reg. No. 30,028

APPLICATION FOR
U.S. LETTERS PATENT
FOR

**"FILTERING DEVICE FOR A CITRUS JUICE
EXTRACTION MACHINE and CONFIGURATION OF A PERFORATING
FILTERING TUBE FOR THE EXTRACTION OF FRUIT JUICES and
CONFIGURATION OF A CONCAVE AND RADIALY CUT
HEMISPHERE FOR THE CUTTING AND PRESSING
OF FRUIT FOR THE EXTRACTION OF JUICE"**

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PRIORITY CLAIMED UNDER 35 U.S. CODE § 119 BASED ON
BRAZILIAN APPLICATIONS:

No. PI-9502218-0 filed June 12, 1995;
No. PI-9502244-9 filed June 19, 1995;
No. MI-5501197-7 filed August 1, 1995;
No. MI-5501198-5 filed August 1, 1995;
No. MI-5501199-3 filed August 1, 1995;
No. MU-7501779-2 filed August 1, 1995;
No. MU-7501780-6 filed August 1, 1995;
No. MU-7501781-4 filed August 1, 1995;
No. PI-9503518-4 filed August 1, 1995;
No. MU-7501563-3 filed August 7, 1995;

(Continued)

No. PI-9503109-0 filed August 7, 1995;
No. MI-5501053-9 filed August 7, 1995;
No. MI-5501976-5 filed December 8, 1995;
No. MU-7502784-4 filed December 8, 1995;
No. MU-7502785-2 filed December 8, 1995;
No. MU-7502786-0 filed December 8, 1995; and,
No. MU-7502994-4 filed December 15, 1995.

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This application is a continuation-in-part application of a previous applications by the same inventor bearing:

1) U.S. Serial No. 08/647,066 filed May 9, 1996,
5 (which claims priority, under 35 U.S. Code § 119 based on
Brazilian Application No. PI-9502244-9 filed June 19,
1995), now U.S. Patent No, 5,655,441 issued August 12,
1997;

2) U.S. Serial No. 08/681,627 filed July 29, 1996,
10 (which claims priority, under 35 U.S. Code § 119 based on
Brazilian Application No. MI-5501198-5 filed August 1,
1995) now U.S. Patent No, 5,720,218 issued February 24,
1998;

3) U.S. Serial No. 08/681,626 filed July 29, 1996,
15 (which claims priority, under 35 U.S. Code § 119 based on
Brazilian Application No. MU-7501779-2 filed August 1,
1995);

4) U.S. Serial No. 08/759,723 filed December 6,
1996, (which claims priority, under 35 U.S. Code § 119
20 based on Brazilian Application No. MU-7502784-4 filed
December 8, 1995);

5) U.S. Serial No. 08/759,722 filed December 6, 1996, (which claims priority, under 35 U.S. Code § 119 based on Brazilian Application No. MU-7502785-2 filed December 8, 1995) now U.S. Patent No, 5,720,219 issued
5 February 24, 1998;

6) U.S. Serial No. 08/759,727 filed December 6, 1996, (which claims priority, under 35 U.S. Code § 119 based on Brazilian Application No. MU-7502786-0 filed December 8, 1995);

10 7) U.S. Serial No. 08/763,679 filed December 11, 1996, (which claims priority, under 35 U.S. Code § 119 based on Brazilian Application No. MU-7502994-4 filed December 15, 1995); and,

8) U.S. Serial No. 08/884,529 filed June 27, 1997,
15 (which claims priority, under 35 U.S. Code § 119 based on Brazilian Applications No. PI-9502218-0 filed June 12, 1995; No. PI-9502244-9 filed June 19, 1995; No. MI-5501197-7 filed August 1, 1995; No. MI-5501198-5 filed August 1, 1995; No. MI-5501199-3 filed August 1, 1995;
20 No. MU-7501779-2 filed August 1, 1995; No. MU-7501780-6 filed August 1, 1995; No. MU-7501781-4 filed August 1,

1995; No. PI-9503518-4 filed August 1, 1995; No. MU-
7501563-3 filed August 7, 1995; No. PI-9503109-0 filed
August 7, 1995; No. MI-5501053-9 filed August 7, 1995;
No. MI-5501976-5 filed December 8, 1995; No. MU-7502784-4
5 filed December 8, 1995; No. MU-7502785-2 filed December
8, 1995; No. MU-7502786-0 filed December 8, 1995; and,
No. MU-7502994-4 filed December 15, 1995).

The entirety of these previous applications are
incorporated herein by reference as if set forth in full
10 below.

A descriptive report of a patent invention:

"IMPROVEMENT TO A FILTERING DEVICE

FOR A CITRUS JUICE EXTRACTION MACHINE".

The patent referred to here as "IMPROVEMENT TO A
15 FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION MACHINE",
as the nomenclature applies, improvements which consist
of a singular mechanical device of automatic functioning,
that by incorporation to the citrus juice extraction
machine, increases substantially its productivity and the
20 quality of the obtained product (juice), be it that at
every cycle of operation the system passes through a
total cleaning and the refuse from the fruit are expelled
into a single reservoir, which facilitates the sanitation

of the equipment and avoids the proliferation of bacteria.

For such, one of the details of the device refers to a perforating tube (described in process "PI 9502244-9" of June 19, 1995, and which is repeated herein below), which was incorporated into a high efficiency filtering system, since it is self cleaning.

It is worth noting that there does not exist any electromechanical device for the driving of the said assembly, which consists basically of the perforating filter and a piston concentric to same, which promotes the internal scraping of the filter in order to clean it.

Such device is totally unknown by the state of the technology and its installation guarantees a relevant increase in the productivity of the assembly.

To better elucidate the model, references will be made to the following included drawings, where:

FIGURE 4 shows a side view of the machine, displaying details of the device.

FIGURE 5 illustrates a plan view of the device installed on the machine.

FIGURE 6 illustrates the perforating filter.

The invention referred to herein as "CONFIGURATION

OF A FRUIT JUICE EXTRACTION MACHINE" or fruit juice extraction apparatus is, as is alluded to in the name itself, a machine developed for the production of citrus fruit juices, such as: lemon, orange, tangerine, ponkan, etc., providing greater practical and sanitary conditions, with the advantage of totally eliminating manual contact during the extraction of the juice from the fruit.

2. DESCRIPTION OF THE PRIOR ART

10 The apparatus of the present invention consists of an automatic system where synchronized and concentric elements press the orange (this fruit will be used only as an example), without crushing the peel, by this avoiding the dispersion of acids (from the peel),
15 favoring the retention of totally natural juice.

Particularly in the case of commercial establishments, we know that in these localities orange juice is extracted by use of electrical rotary squeezers that are noisy and non-sanitary; and such squeezers are
20 of low production and generate excessive physical fatigue on the part of the operator, since he has to cut hundreds of oranges in half every day, processing each and every orange half in the squeezer. It is not difficult to

notice that this process is non-sanitary, since manual contact is indispensable.

These factors make the instantaneous production of natural juice not viable, since the slow rates of production make for an expensive final product, plus the fact that consumers will tend to opt for processed drinks given the lack of sanitary conditions in the extraction of natural juices. It is also important to observe the existence of manual squeezers, that incorporate all of the previously mentioned negative features, and are totally not viable for production of juice on a commercial scale.

Equipment that crush all of the fruit in the extraction of juice have an elementary disadvantage that is the dispersion of the acids in the peel, leaving the juice with a bitter taste, not fit for consumption.

It is worth noting that to resolve these problems, several types of machinery and equipment for the extraction of juice have appeared, incorporating important shortcomings that are important to be analyzed, such as:

- currently it is known of a machine for processing citrus fruit, especially oranges, where there

is a system which after the insertion of the fruit, it is cut in half, and the halves are separated in two rotating cylinders in which two geared reamers, also rotating and hemispherical in shape, crush the fruit halves extracting the juice.

Nevertheless, this system, because of its characteristics, exposes the extracted juice to the peel, in such a manner that the juice bathes, partially or totally, the peel, provoking an emulsification of the oil contained in the peel, incorporating it in the juice, making it acidic and bitter.

It is worth noting that in laboratory tests, it is observed that the level of peel oil in the juice, with this system, varies from 50 to 500% above the norm tolerable for consumption.

There are also other known equipment that function in distinctly different manners than the one previously cited, encompassing voluminous and heavy mechanical systems that provoke the crushing of the whole fruit.

To have a more complete idea of these machines, they are so heavy that they require the use of hoists or cranes for maneuvering.

The existing mechanical systems consist of actuated

arms that compress the fruit between two concentric peelers. Said concentric peelers are built with multiple radial openings that interlink with each other (one cupping the other). Nevertheless, the design of the openings makes it such that the fruit becomes crushed and not cut, resulting in the liberation of peel oil into the juice.

As a result of the large space occupied by the machines, the space for fruit storage becomes very limited, forcing the operator to feed the machine constantly.

Systems taught in FMC Corporation's U.S. Patents No. 5,070,778, No. 5,170,700, No. 5,339,729 and, No. 5,483,870, produce oil in the juice and the vertical cores have a tendency to jam with the fruit.

In analyzing these inconveniences, the applicant, who is active in this segment of the market, has developed the apparatus herein claimed, as a definitive solution to these inconveniences.

The apparatus of the present invention is notably more compact and as a consequence lighter. This is due to the utilization of simplified mechanisms with greater functional efficacy.

These mechanisms make possible the easy cleaning of the equipment and less maintenance, noting also that the noise level is slightly lower.

In its fundamental scope, the apparatus fact
5 presented herein functions in the following manner:

- on the upper part of a tray which holds several fruit which, by force of gravity, fall one by one between two concave and radially cut hemispheres, one of those moves axially being actuated by a rod connected to
10 a type of crankshaft arm.

The system does not crush the peel and does shear it in multiple slivers, at the same time it compresses the fruit, a factor that impedes the release of the oil in the peel. It is worth noting that this peel, after the
15 extraction of the juice, falls totally dry into an appropriate reservoir.

Unequivocally, it can be concluded that the cost/benefit relationship of the present invention is greater than that of those known to date, because of its
20 compact nature and high quality juice produced, similar to a home made juice.

Because of these advantages and others that will easily be noticed by the user, as well as its uniqueness

in relation to the state of the technology, the applicant, therefore, submits this machine has the requisites for achieving patent approval.

SUMMARY OF THE INVENTION

5 The apparatus of the present invention for processing citrus fruit in general, without manual contact, comprises a tubular chassis fixed to an extraction box being on it affixed a gearmotor actuating an crank and rod assembly which dislocates one concave
10 hemisphere against another concave hemisphere pressing the fruit released by a trigger situated on an opening in a tray in which one of the concave hemispheres has a central pin and on the other a perforating tube for the extraction of the juice, the solid residues being
15 released into a receptacle and the liquid being passed through a filter and then falling into a reservoir which has faucets or outlets.

FIGURE 1 is a side elevational view, partially in cross-section, of the preferred embodiment of the
20 apparatus of the present invention;

FIGURE 2 is front elevational view, partially in cross-section, of the embodiment of FIGURE 1;

FIGURE 3 is a top plan view, partially in

cross-section, of the embodiment of FIGURE 1;

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

CONFIGURATION OF A FRUIT JUICE EXTRACTION MACHINE or
the fruit juice extracting apparatus of the present
5 invention, in accordance with FIGURES 1 - 3, comprises a
tubular chassis 1, affixed to an extraction box 1' for
housing juice, mounted vertically on this box 1' is a
garmotor 2 which drives a crank and rod 3 which provokes
the axial movement of one of the concave and radially cut
10 hemispheres 4 against the other concave and radially cut
hemisphere 5, both radially interfacing.

On the upper part of the apparatus is provided a
tray 6 with an opening 7 through which the fruit is
driven to fall in between the concave hemispheres 4, 5,
15 all shielded by a protective cover 8 over the entire
assembly.

The concave hemisphere 4 has a concentric central
pin 9 and the concave hemisphere 5 has a perforating tube
10 through which the juice is extracted. The fruit peel
20 and core fall into receptacle 11.

The concave hemisphere 4 drives a trigger 12 during
its motion feeding one fruit at a time; the juice coming
from the tube 10 passes through a filter 13 and is

retained in a reservoir 14 which is equipped with faucets or outlet ports 15 for dispensing.

Incidental residues, such as core and seeds do not pass through the filter 13 and are ejected through the
5 tube 10 toward the receptacle 11.

"IMPROVEMENT TO A FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION MACHINE", constitute by an automatic system, composed by an extended perforating tube (21) having multiple transverse slits (22) of increasing
10 diameter from inside to outside, being said tube (21) concentrically affixed to the fixed peeler (23), mounted with bolts to the side wall of the machine (24) jointly with the flange of the tubular juice collector (25), which projects itself outwardly from the machine.

15 Said juice collector (25) has a threaded cover (26), concentrically to which engages the perforating tube (21), being on said cover (26) built-in a tubular extension (27) on which slides a rod (28) connected to the piston (29) which works inside the tube (21), being
20 that the cutting extremity projects itself out of this tube in order to expel the refuse for the pressing of the fruit, since during the pressing the piston is impelled inwardly to the tube (21) and in this manner offers a

counter pressure on the flow of extraction, due to the action of a helical compression spring (110).

5 The juice is filtered by the slits (22) which by its configuration is self cleaning, passing through a chamber (11) formed by the juice collector (25) and the peeler (23). The juice is totally filtered, then exiting through a window (112) on the juice collector, directly to the interior of a dedicated reservoir.

10 The refuse materials are collected by a central reservoir; being observable that this system, allied to the use on stainless steel materials, guarantees the maintenance of the organoleptic characteristics of the extracted juice.

SUMMARY

15 Patent of a model of utility "IMPROVEMENT TO A FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION MACHINE", composed of improvements introduced to the filtering system of the machine of the claimant consisting of a perforating tube (21) having multiple transverse slits
20 (22) of increasing diameter from inside to outside, concentric to the peeler (23), and the tubular juice collector (25), that has a window opening (112) and a threaded cover (26), which centers the tube (21), being

built-in a tubular extension (27) on which slides a rod
(28) connected to the piston (29) pushed by the spring
(110) being that the cutting extremity of the piston
extends outward of the tube (21); a chamber (111)
5 collects the juice filtered through the slits (22).

A descriptive report of a patent invention of:

"A FILTERING DEVICE FOR A
CITRUS JUICE EXTRACTION MACHINE".

The patent referred to here as, "A FILTERING DEVICE
10 FOR A CITRUS JUICE EXTRACTION MACHINE", as the title
implies, improvements to the object described in process
"PI 9502244-9" of June 19, 1995, of the same claimant,
and which is repeated herein above, improvements which
consist of singular mechanical device that functions
15 automatically, that once incorporated into the machine,
increases substantially its productivity and the quality
of the obtained product (juice), be it that at every
cycle of operation the systems passes through a total
cleaning and the refuse from the fruit are expelled into
20 a single reservoir, which facilitates the sanitation of
the equipment and avoids proliferation of bacteria.

For such, one of the details of the device refers to
a perforating tube (already described in another

descriptive report), which was incorporated into high efficiency filtering system, since it is self cleaning.

It is worth noting that there does not exist any electromechanical device for the driving of the said
5 assembly, which consists basically of the perforating filter and a piston concentric to same, which promotes the internal scraping of the filtering in order to clean it.

Such device is totally unknown by the state of the
10 technology and its installation guarantees a relevant increase in the productivity of the assembly.

To better elucidate the model, references will be made to the following included drawings, where:

FIGURE 7 illustrates the top view detailing the
15 device in question together with the cutting, pressing and juice extraction mechanism.

FIGURE 8 illustrates a cross-sectional side view and top view of the juice collector.

FIGURE 9 illustrates on a larger scale the support
20 of the perforating filter.

FIGURE 10 illustrates the perforating tube's piston.

FIGURE 11 illustrates the cross section of the perforating filtering tube.

"A FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION MACHINE", composed by two rods (41) passing through the machine's structure (42), and the sliding mobile peeler support (43). Said rods contain pins (44) which
5 condition their return concurrently with the support (43) after the pressing of the fruit.

A base (45) is affixed to the two rods (41) in a manner such that the configuration facilitates the disassembly for cleaning purposes; on this base there is
10 inserted a bolt (46) which mounts the extension (47) to the piston (48) (which need not have a same diameter relief at the center) which works concentric to the perforating tube (49) which in turn is concentric to the fixed peeler, mounted on the machine.

The piston (48) contains a cutting edge which
15 projects itself out of the tube (49) at the end of the opening cycle of the peelers, so that it totally cleans the interior of this tube which contains a plurality transverse slits (50) which have increasing diameters
20 from inside to outside, in a manner to facilitate the self cleaning.

The tube (49) is mounted to a round base (51) threaded to the tubular juice collector (52) which has a

flange on which the static peeler is bolted to. Said collector and the peeler form a chamber (53) which collects the juice extracted from the fruit and filtered by the slits (50).

5 On the posterior position (outside of the machine) the collector (52) has a transverse slit (54) through which the totally filtered juice exits. The refuse materials (seed, core, etc.) pushed by the piston (48) fall inside the machine into a dedicated container.

10 It is worth noting that the constructive characteristics, allied to the utilization of stainless steel materials do not offer any alterations to the organoleptic characteristics of the fruit juice.

SUMMARY

15 Patent of invention "A FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION MACHINE", developed for an equipment of the same claimant, being that its improvements are composed of two rods (41) passing through the machine's structure (42), and the sliding mobile peeler support
20 (43) having pins (44) which condition the return of these rods to the support (43) being these rods fixed to a base (45) to which there is inserted a bolt (46) fixing the extension (47) to the piston (48) which contains a

cutting edge and is concentric to the perforating tube
(49) having multiple transverse slits (50) which is
mounted to a round base (51) threaded to the tubular
juice collector (52) which has a flange on which the
5 static peeler is bolted on to so as to form the chamber
(53) which collects the juice, which in turn exits
through slit (54).

A descriptive report of a patent of and industrial
model:

10 "CONFIGURATION OF A PERFORATING
FILTERING TUBE FOR THE EXTRACTION OF FRUIT JUICE".

The patent referred to here as "CONFIGURATION OF A
PERFORATING FILTERING TUBE FOR THE EXTRACTION OF FRUIT
JUICE", fabricated in stainless steel material or the
15 like, an accessory utilized on the equipment described in
process "PI 9502244-9" of June 19, 1995, of the same
claimant, and which is repeated herein above, which is
designed for cutting and perforating of fruit and
filtering of the juice extracted, such as: lemon, orange,
20 tangerine, pokan, etc., for the extraction of their
juice, with greater quality, practicality and hygiene,
thanks to the configuration of the artifact.

The object consists of a tubular part having

multiple symmetrical slits, trochoidal and parallel to each other, through which the extracted fruit juice exits, being said part installed on the pressing assembly of the machine.

5 Said object makes a central cut on the fruit through which the juice exits to be filtered by the aforementioned self cleaning slits, thanks to their configuration.

10 It is worth noting that the object in question presents singular details in comparison to the state of the technology, encompassing therefore the conditions to achieve the privilege sought.

To better comprehend the model, references will be made to the following included drawings, where:

15 FIGURE 12 shows the tube in a cross-sectional view and a side view.

FIGURE 13 shows the tube perspective.

20 "CONFIGURATION OF A PERFORATING FILTERING TUBE FOR THE EXTRACTION OF FRUIT JUICE", composed of a body (61) of stainless steel material or other materials resistant to oxidation and adapted to this purpose, having a circular shape.

Its extremity (62) is sharpened in order to

perforate the fruit, followed by a straight portion (63).
The body (61) has a plurality of transverse slits (64),
configured strategically through the machining by a
circular mill, forming an external diameter (65) which is
5 larger than the internal diameter (66), which in turn
impedes the retention of filtered residues.

SUMMARY

- "IMPROVEMENT TO A FILTERING DEVICE FOR A CITRUS
JUICE EXTRACTION MACHINE", characterized by a perforating
10 tube (21) having multiple transverse slits (22) of
increasing diameter from inside to outside, concentric to
the peeler (23), and the tubular juice collector (25),
that has a window opening (112) and a threaded cover
(26), which centers the tube (21), being built-in a
15 tubular extension (27) on which slides a rod (28)
connected to the piston (29) pushed by the spring (110)
being that the cutting extremity of the piston extends
outward of the tube (21); a chamber (111) collects the
juice filtered through the slits (12).

20 - "A FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION
MACHINE", characterized by the fact that two rods (41)
passing through the machine's structure (42), and the
sliding mobile peeler support (43) having pins (44) which

in turn are fixed to a base (45) to which there is inserted a bolt (46) fixing the extension (47) to the piston (48) which contains a cutting edge and is concentric to the perforating tube (49) having multiple transverse slits (50) which is mounted to a round base (51) threaded to the tubular juice collector (52) which has a flange on which the static peeler is bolted on to so as to form the chamber (53) which collects the juice, which in turn exits through slit (54).

10 - "A FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION MACHINE," characterized by the fact that the cutting edge of the piston (48) protrudes out of the tube (49) on its return course, being slits (50) of this tube of an increasing diameter from inside to outside of the tube.

15 A descriptive report of a patent of a model of utility:

"CONFIGURATION OF A CONCAVE AND RADially CUT HEMISPHERE FOR THE CUTTING AND PRESSING OF FRUIT FOR THE EXTRACTION OF JUICE".

20 The patent referred to here as, "CONFIGURATION OF A CONCAVE AND RADially CUT HEMISPHERE FOR THE CUTTING AND PRESSING OF FRUIT FOR THE EXTRACTION OF JUICE", fabricated in stainless steel or the like, as an

accessory to the equipment of the same claimant, which is
designed for the cutting and pressing of fruits such as:
lemon, orange, tangerine, pokan, etc., for the extraction
of their juices, with greater quality, practicality and
5 sanitary conditions, thanks to the configuration of the
artifact.

The object, functionally speaking, has a slimmer
profile, which reduces the complexity of the assembly and
its capacity to retain residues, being that, it consists
10 of two parts, symmetrical and with divergent openings
with concave cavities turned toward each other, having
radially openings that permit the engaging of one part
with the other.

It is worth noting that the present object presents
15 singular details in comparison to the state of the
technology, incorporating the conditions for achieving
the privilege claimed.

For better comprehension of the model, references
will be made to the following included drawings:

20 FIGURE 14 shows in a plan, the external shape of one
of the radially cut and concave hemispheres.

FIGURE 15 shows a cross section of the internal part
of one of the radially cut and concave hemispheres.

FIGURE 16 shows the two radially cut and concave hemispheres in the operating position.

FIGURE 15 and 17 illustrate cut B-B and a cut A-A of FIGURE 14.

5 "CONFIGURATION OF A CONCAVE AND RADIALLY CUT
HEMISPHERE FOR THE CUTTING AND PRESSING OF FRUIT FOR THE
EXTRACTION OF JUICE", consists of a body (1) of metallic
or other materials, having a divergent opening.

Internally, the body (201) has a concave shape
10 (202), being said body (201) configured by a multiplicity
of radial blades (203) that emerge from a solid block
(204). The longer blades (205) mesh with the other
blades of normal size, in a manner as to serve as support
for the fruit.

15 Concentrically the body (201) contains a concentric
hole (206); the blades (203) have an internal radius
(207) smaller than the smallest external radius (8),
being its extremities (209), slightly rounded (209).

What is claimed as invention is:

1. A fruit juice extraction apparatus comprising:
a chassis having mounted thereon juice
extraction means;

5 said juice extraction means having means for
storing said fruit, said storing means having an aperture
therein for allowing articles of said fruit to be
deposited between two concave hemispheres;

drive means for actuating means for forcing the
first of said concave hemispheres against the second of
10 said concave hemispheres, thereby pressing an article of
said fruit deposited between said hemispheres;

35443-6875000
said first concave hemisphere having a central
pin and said second concave hemisphere a perforating tube
for the extraction of juice from said article of fruit,
15 whereby the solid residue is deposited in a receptacle
and the liquid is passed through a filter and then falls
into a reservoir which has outlet ports therein, said
perforating tube having multiple transverse slits of
increasing diameter from inside to outside.

20 2. A fruit juice extraction apparatus comprising:
a chassis having mounted thereon juice
extraction means;

said juice extraction means having a container

for storing said fruit, said container having an aperture therein for allowing articles of said fruit to be deposited between two concave hemispheres;

5 a motor for actuating means for forcing the first of said concave hemispheres against the second of said concave hemispheres, thereby pressing an article of said fruit deposited between said hemispheres;

10 said first concave hemisphere having a central pin and said second concave hemisphere a perforating tube for the extraction of juice from said article of fruit, whereby the solid residue is deposited in a receptacle and the liquid is passed through a filter and then falls into a reservoir which has outlet ports therein, said perforating tube having multiple transverse slits of
15 increasing diameter from inside to outside.

3. A fruit juice extraction apparatus comprising:

a chassis having mounted thereon juice extraction means;

20 said juice extraction means having a container for storing said fruit, said container having an aperture therein and means for releasing an article of said fruit for allowing said article of said fruit to be deposited between two concave hemispheres;

a motor for actuating means for forcing the first of said concave hemispheres against the second of said concave hemispheres, thereby pressing an article of said fruit deposited between said hemispheres;

5 said first concave hemisphere having a central pin and said second concave hemisphere a perforating tube for the extraction of juice from said article of fruit, whereby the solid residue is deposited in a receptacle and the liquid is passed through a filter and then falls
10 into a reservoir which has outlet ports therein; said perforating tube having multiple transverse slits of increasing diameter from inside to outside, and, said filter having a curved body portion with a passageway of increasing width and terminating in a convergent liquid
15 exit port; and,

means for signaling the level of said solid residue accumulated in said receptacle.

4. A fruit juice extraction apparatus comprising:
a chassis having mounted thereon juice
20 extraction means;

said juice extraction means having means for storing said fruit, said storing means having an aperture therein for allowing articles of said fruit to be

deposited between two concave hemispheres;

drive means for actuating means for forcing the first of said concave hemispheres against the second of said concave hemispheres, thereby pressing an article of said fruit deposited between said hemispheres;

said first concave hemisphere having a central pin and said second concave hemisphere a perforating tube for the extraction of juice from said article of fruit, whereby the solid residue is deposited in a receptacle and the liquid is passed through a filter and then falls into a reservoir which has outlet ports therein, each of said concave hemispheres having its concave surface defined by a plurality of spaced-apart radial blades.

5. The apparatus of CLAIM 4, wherein said radial blades of each of said hemispheres depend from a base mounted to said chassis.

6. The apparatus of CLAIM 5, wherein said radial blades of each of said hemispheres are of at least two different lengths.

7. The apparatus of CLAIM 4, wherein when said first hemisphere is forced against said second hemisphere, said radial blades of said first hemisphere are positioned intermediate said radial blades of said

second hemisphere.

8. The apparatus of CLAIM 4, wherein when said
first hemisphere is forced against said second
hemisphere, said radial blades of said first hemisphere
5 are positioned intermediate said radial blades of said
second hemisphere.

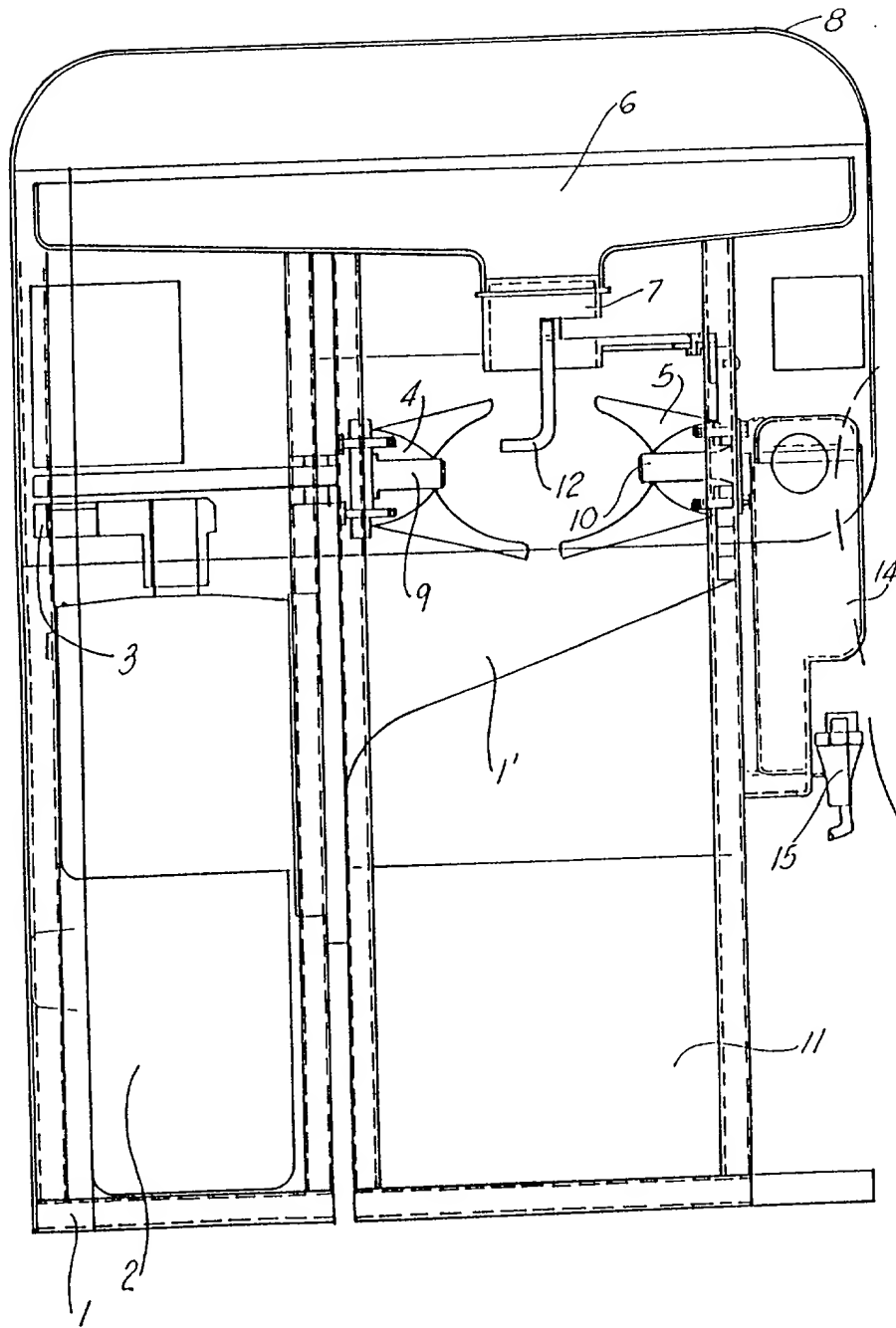


FIG. 1

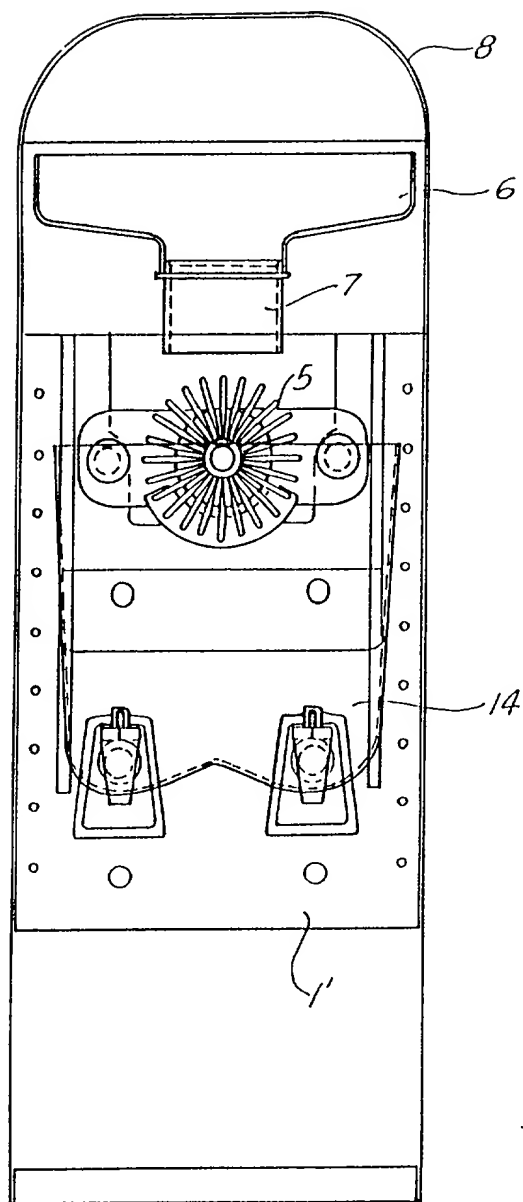


FIG. 2

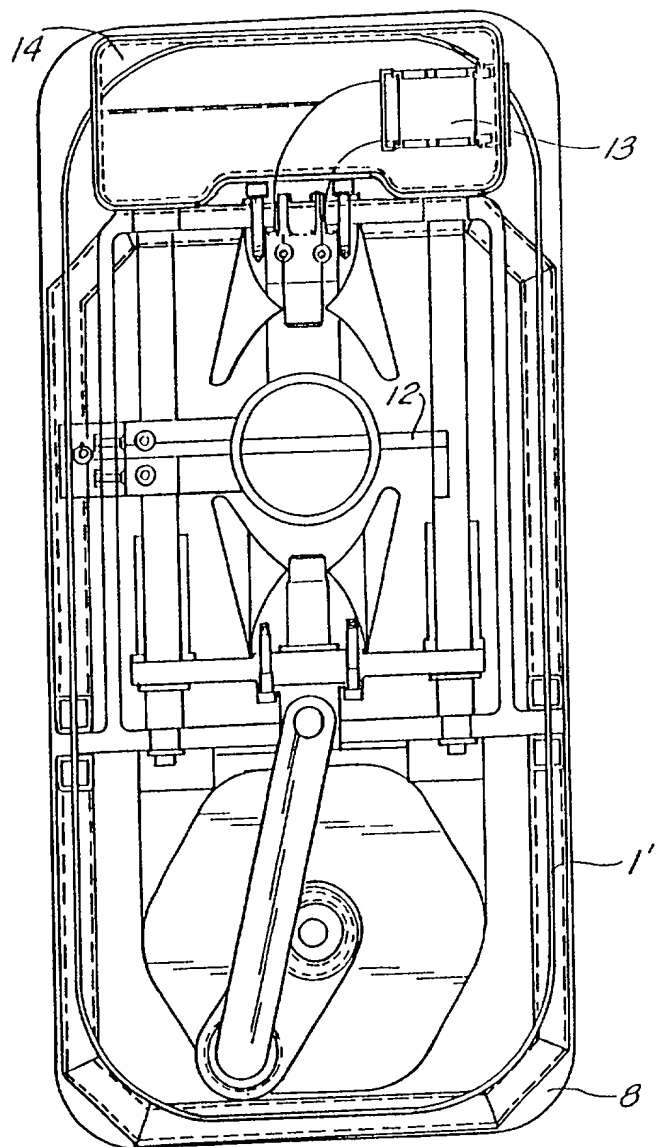


FIG. 3

Fig. 4

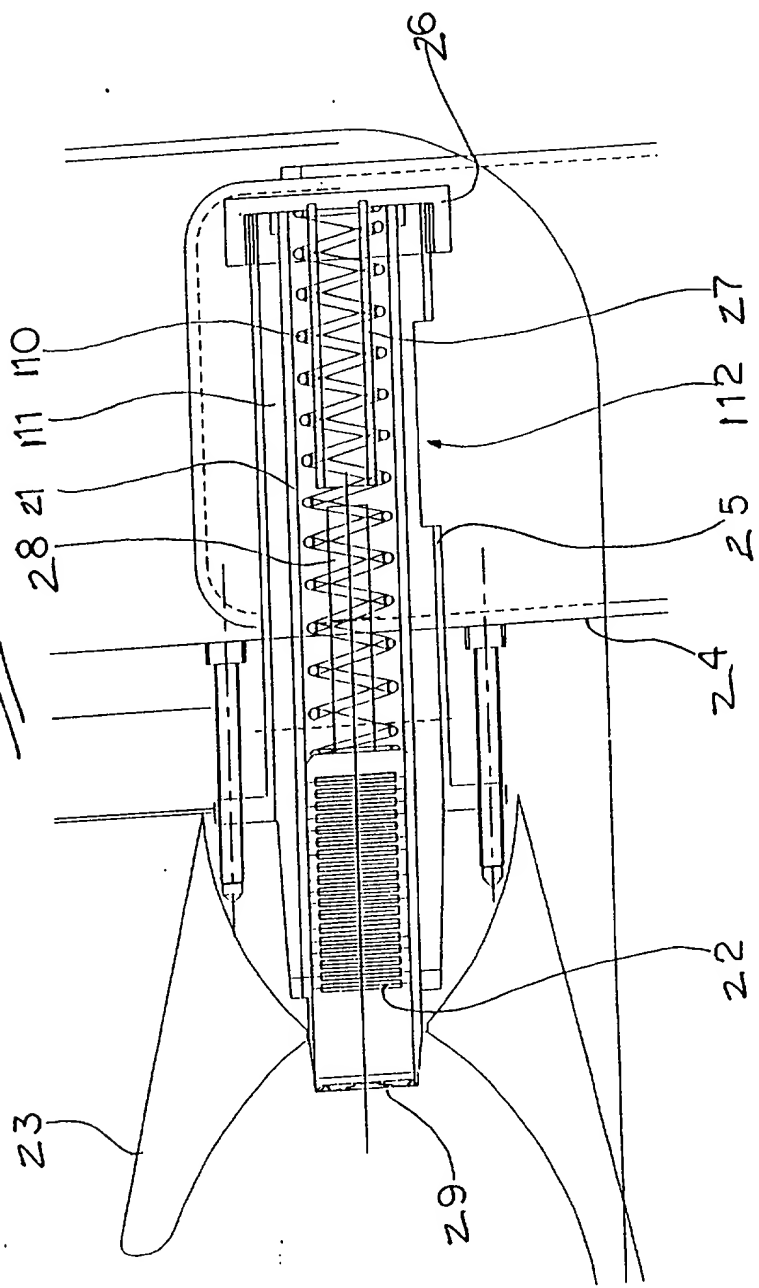


Fig. 2

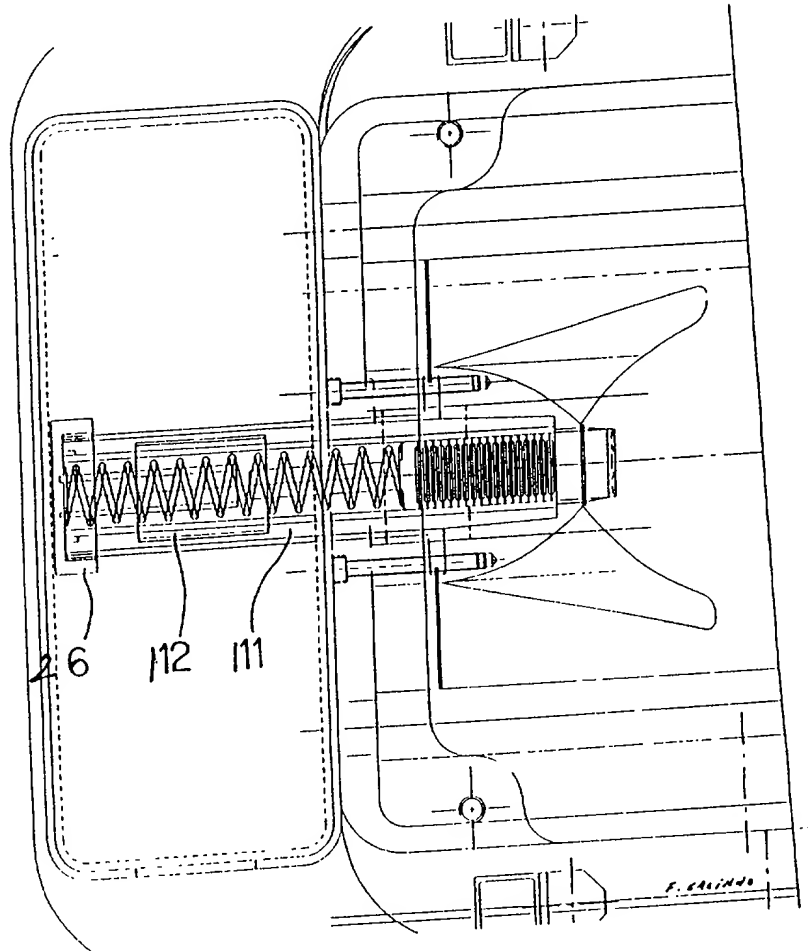


Fig. ~~7~~⁶

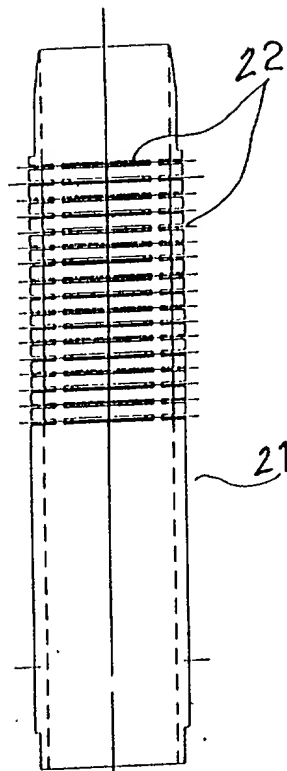


Fig. 7

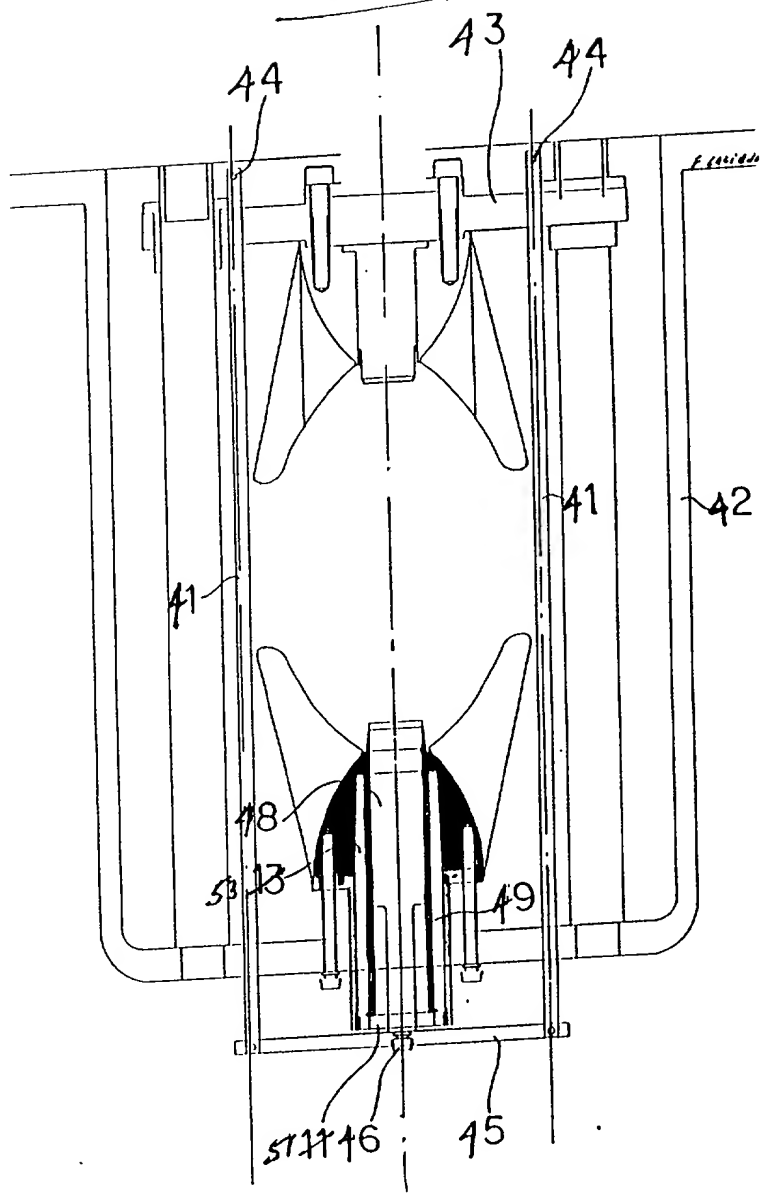


Fig. 2

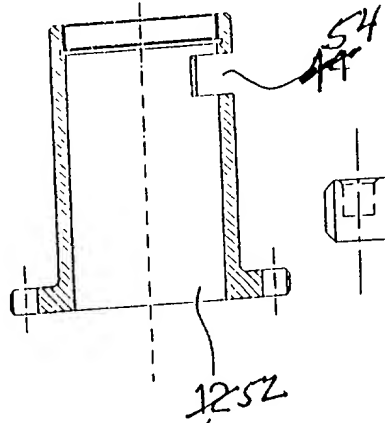


Fig. 3

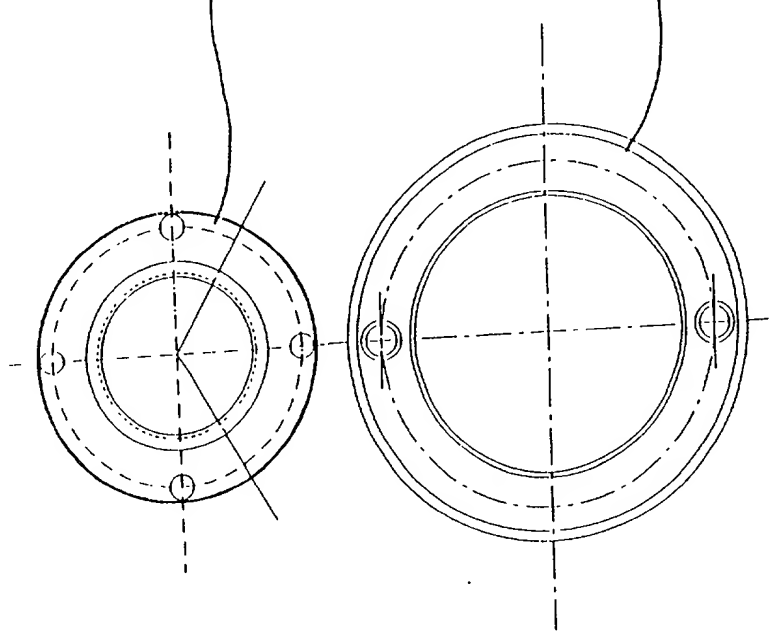
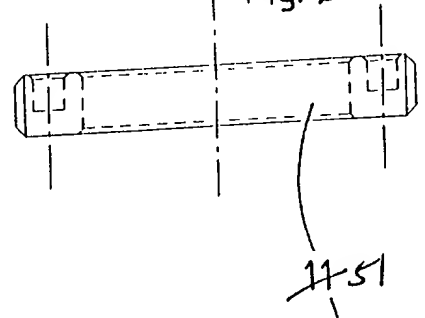


Fig. ~~8~~ 10

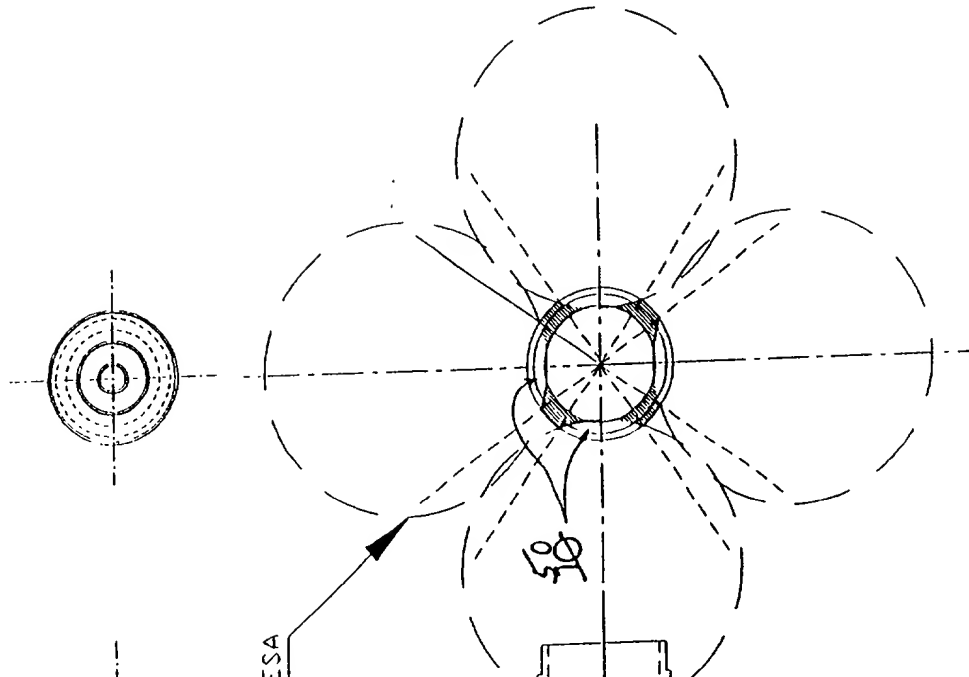
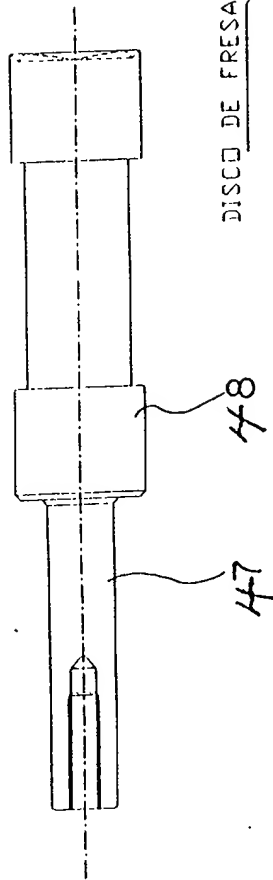
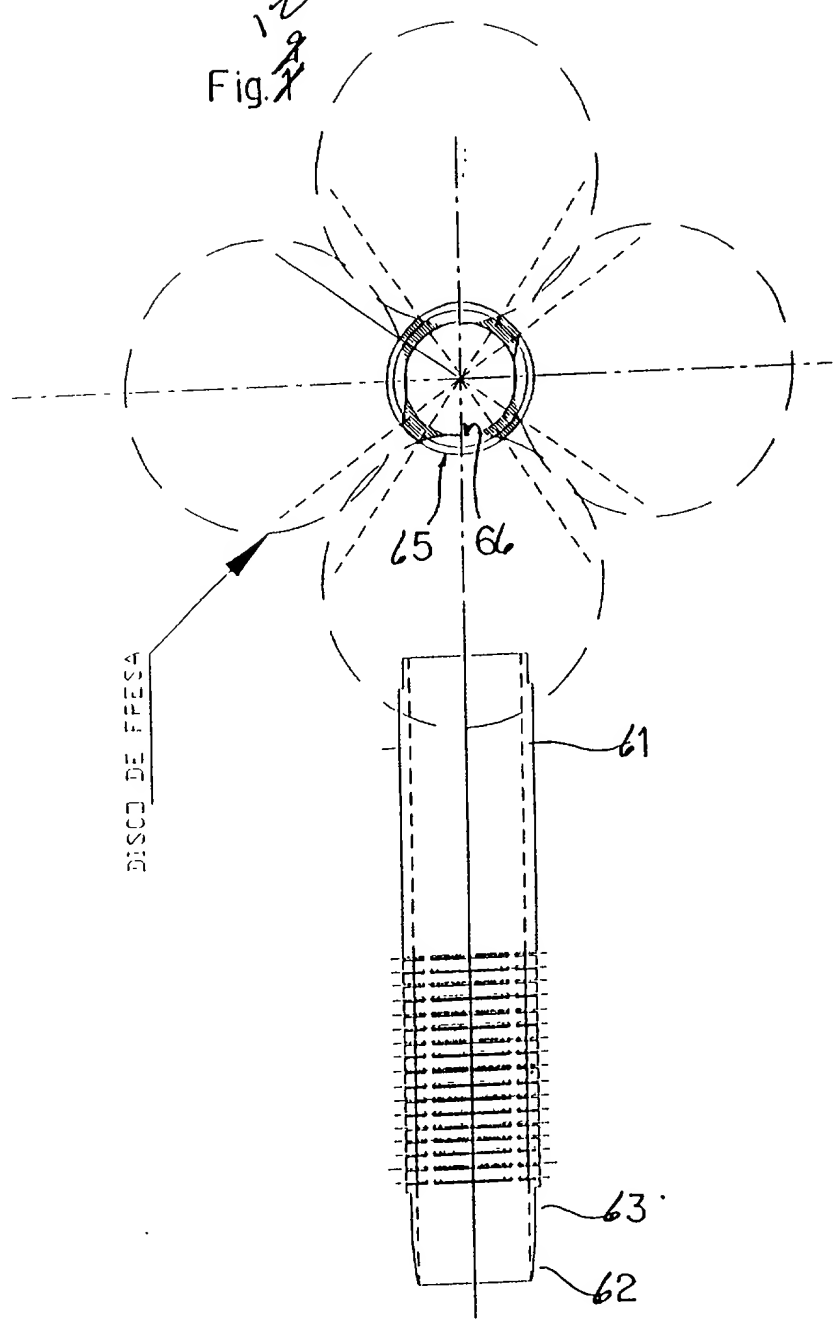


Fig. ~~8~~ 11

Fig. 12



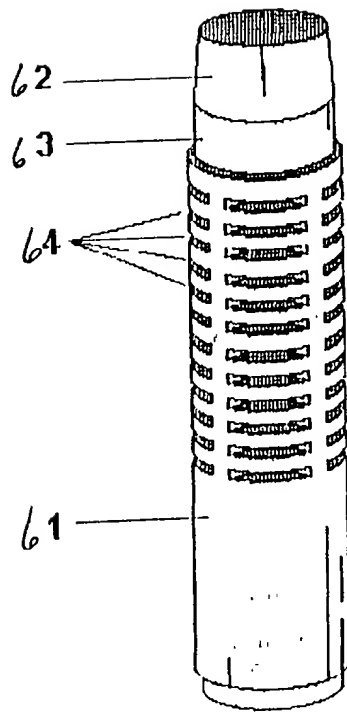


Fig. ¹³~~10~~ 2

FIG. 14

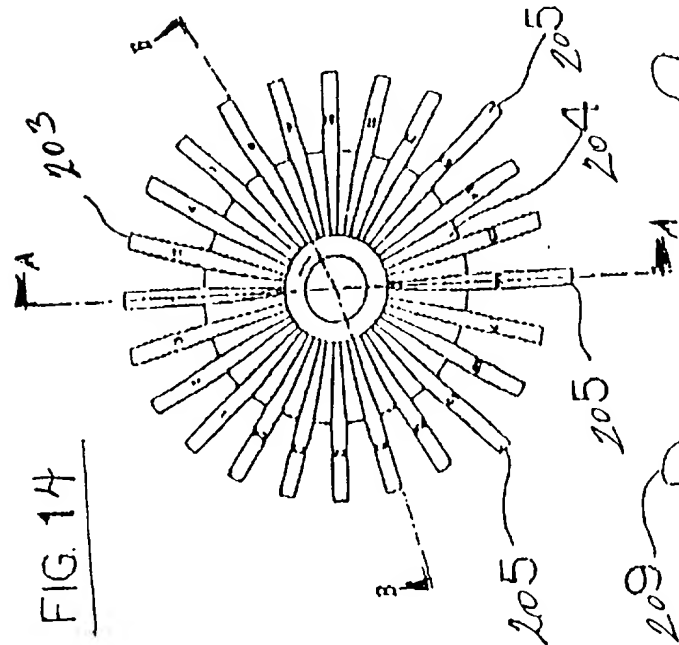


FIG. 16

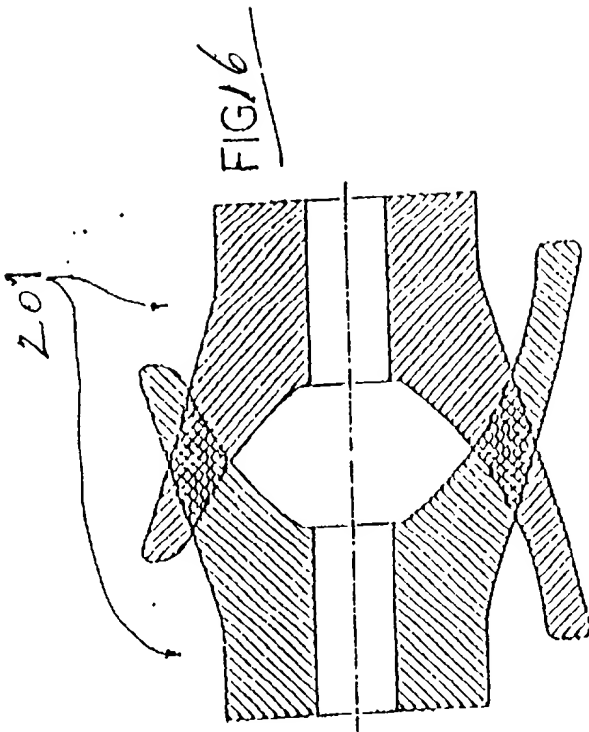


FIG. 15

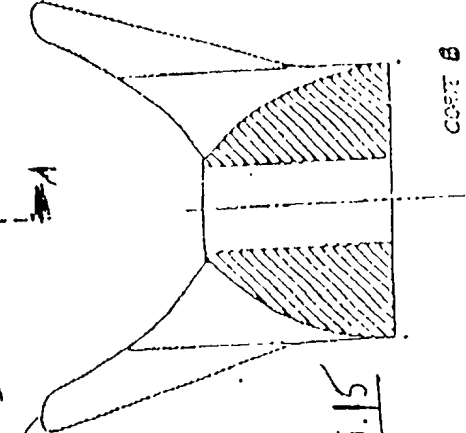
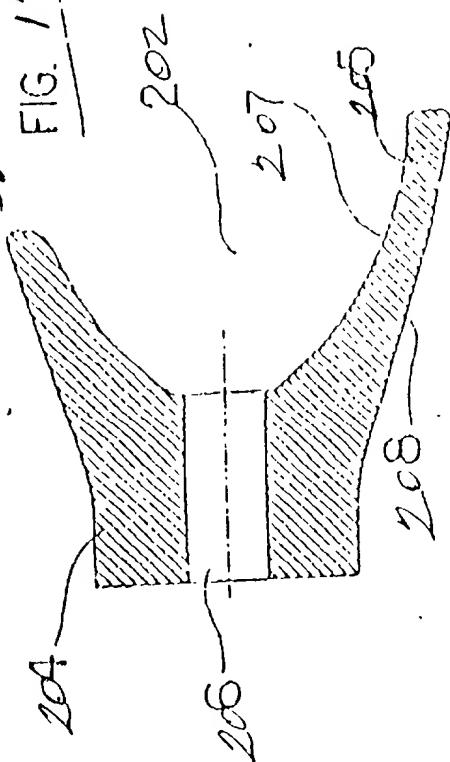


FIG. 17



COPY A

DECLARATION IN COPENDING APPLICATION
CONTAINING ADDITIONAL SUBJECT MATTER

ATTORNEY'S DOCKET NO.

M-95-3195-U.17-CIP

I, the below named inventor, hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

that I verily believe that I am the original, first and sole inventor if only one name is listed at 201 below, or a joint inventor if plural

inventors are named below at 201-203, of the invention entitled: "Filtering Device For A Citrus Configuration of A Perforating Filtering Tube For The Extraction of Fruit Juices and Configuration of A Concave And Radially Cut" which is described and claimed in the attached specification; Hemisphere Extraction of Juice. "that this application in part discloses and claims subject matter disclosed in my earlier filed pending application,"

Serial No. See SCHEDULE A, filed attached;

that I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application; that as to the subject matter of this application which is common to said earlier application, I do not know and do not believe that the same was ever known or used in the United States of America before my or our invention thereof or patented or described in any printed publication in any country before my or our invention thereof, or more than one year prior to said earlier application, or in public use or on sale in the United States of America more than one year prior to said earlier application;

that the common subject matter has not been patented or made the subject of an inventor's certificate issued before the date of said earlier application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to said earlier application; and

as to applications for patents or inventor's certificate on the common subject matter filed in any country foreign to the United States of America, prior to said earlier application by me or my legal representatives or assigns,

☐ no such applications have been filed, or

☒ such applications have been filed as follows:

EARLIEST FOREIGN APPLICATION(S), IF ANY, FILED WITHIN 12 MONTHS PRIOR TO SAID EARLIER APPLICATION

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. 119
BRAZIL	See SCHEDULE A	attached		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
				YES <input type="checkbox"/> NO <input type="checkbox"/>

ALL FOREIGN APPLICATIONS, IF ANY, FILED MORE THAN 12 MONTHS PRIOR TO SAID EARLIER APPLICATION

that as to the subject matter of this application which is not common to said earlier application, I do not know and do not believe that the same was ever known or used in the United States of America before my or our invention thereof or patented or described in any printed publication in any country before my or our invention thereof, or more than one year prior to this application, or in public use or on sale in the United States of America more than one year prior to this application;

that said non-common subject matter has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application; and

as to applications for patents or inventor's certificate on the invention filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns,

☐ no such applications have been filed, or

☒ such applications have been filed as follows:

EARLIEST FOREIGN APPLICATION, IF ANY, FILED WITHIN 12 MONTHS PRIOR TO THIS APPLICATION

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
See BRAZIL	See SCHEDULE A	attached		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO

ALL FOREIGN APPLICATIONS, IF ANY, FILED MORE THAN 12 MONTHS PRIOR TO THIS APPLICATION

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration no.)

George A. BODE
(Reg. No. 30,028)

SEND CORRESPONDENCE TO:

George A. BODE, Esq.
BODE & ASSOCIATES, P.C.
2314 BROADWAY
NEW ORLEANS, LA 70125 -4125

DIRECT TELEPHONE CALLS TO:
(name and telephone number)

(504) 861-8288
Fax: 866-6717

201	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
202	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
203	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE January 7, 1998	DATE	DATE

* I specifically acknowledge the duty to disclose material information as defined in 37 CFR § 1.56(a) which occurred between the filing date of the prior application and the filing date of this continuation-in-part application which discloses and claims subject matter in addition to that disclosed in the prior application (37 CFR § 1.63(d)).

I was aware of this duty before I signed the "Declaration And Power Of Attorney - Original Patent Application" originally filed with the application(s).

INVENTOR: CARLOS NETO MENDES
Rua Voluntários de Pátria, 1738
Araraquara, São Paulo, BRAZIL
CEP 14.801-320

**"FILTERING DEVICE FOR A CITRUS JUICE EXTRACTION MACHINE
and CONFIGURATION OF A PERFORATING FILTERING TUBE FOR THE
EXTRACTION OF FRUIT JUICES and CONFIGURATION OF A CONCAVE
AND RADIALY CUT HEMISPHERE FOR THE CUTTING AND PRESSING
OF FRUIT FOR THE EXTRACTION OF JUICE"**

This application is a continuation-in-part
application of a previous applications by the same
inventor bearing:

- 1) U.S. Serial No. 08/647,066 filed May 9, 1996,
(which claims priority, under 35 U.S. Code § 119 based on
Brazilian Application No. PI-9502244-9 filed June 19,
1995), now U.S. Patent No, 5,655,441 issued August 12,
1997;
- 2) U.S. Serial No. 08/681,627 filed July 29, 1996,
(which claims priority, under 35 U.S. Code § 119 based on
Brazilian Application No. MI-5501198-5 filed August 1,
1995) now U.S. Patent No, 5,720,218 issued February 24,
1998;
- 3) U.S. Serial No. 08/681,626 filed July 29, 1996,
(which claims priority, under 35 U.S. Code § 119 based on
Brazilian Application No. MU-7501779-2 filed August 1,
1995);
- 4) U.S. Serial No. 08/759,723 filed December 6,
1996, (which claims priority, under 35 U.S. Code § 119
based on Brazilian Application No. MU-7502784-4 filed
December 8, 1995);
- 5) U.S. Serial No. 08/759,722 filed December 6,
1996, (which claims priority, under 35 U.S. Code § 119
based on Brazilian Application No. MU-7502785-2 filed
December 8, 1995) now U.S. Patent No, 5,720,219 issued
February 24, 1998;
- 6) U.S. Serial No. 08/759,727 filed December 6,
1996, (which claims priority, under 35 U.S. Code § 119
based on Brazilian Application No. MU-7502786-0 filed
December 8, 1995);
- 7) U.S. Serial No. 08/763,679 filed December 11,
1996, (which claims priority, under 35 U.S. Code § 119
based on Brazilian Application No. MU-7502994-4 filed
December 15, 1995); and,
- 8) U.S. Serial No. 08/884,529 filed June 27, 1997,
(which claims priority, under 35 U.S. Code § 119 based on
Brazilian Applications No. PI-9502218-0 filed June 12,
1995; No. PI-9502244-9 filed June 19, 1995; No. MI-
5501197-7 filed August 1, 1995; No. MI-5501198-5 filed
August 1, 1995; No. MI-5501199-3 filed August 1, 1995;
No. MU-7501779-2 filed August 1, 1995; No. MU-7501780-6
filed August 1, 1995; No. MU-7501781-4 filed August 1,
1995; No. PI-9503518-4 filed August 1, 1995; No. MU-
7501563-3 filed August 7, 1995; No. PI-9503109-0 filed
August 7, 1995; No. MI-5501053-9 filed August 7, 1995;
No. MI-5501976-5 filed December 8, 1995; No. MU-7502784-4
filed December 8, 1995; No. MU-7502785-2 filed December
8, 1995; No. MU-7502786-0 filed December 8, 1995; and,
No. MU-7502994-4 filed December 15, 1995).

SCHEDULE A

Applicant or Patentee: Carlos MENDES NETO Attorney's
Serial or Patent No.: _____ Docket M-95-3195-U.17-CIP
Filed or Issued: _____
For: " Filtering Device For A Citrus Juice Extraction Machine and
Configuration... Extraction Of Juice ."

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled same as "For" above, described in

- (X) the specification filed herewith.
() application serial no. _____, filed _____.
() patent no. _____, issued _____.

I have not assigned, granted, conveyed, or licensed and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- (X) no such person, concern or organization.
() persons, concerns or organizations listed below:*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27).


FULL NAME: _____
ADDRESS: _____
() INDIVIDUAL () SMALL BUSINESS CONCERN () NON-PROFIT ORGANIZATION

FULL NAME: _____
ADDRESS: _____
() INDIVIDUAL () SMALL BUSINESS CONCERN () NON-PROFIT ORGANIZATION

FULL NAME: _____
ADDRESS: _____
() INDIVIDUAL () SMALL BUSINESS CONCERN () NON-PROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issued thereon, or any patent to which this verified statement is directed.

Carlos MENDES NETO
NAME OF INVENTOR NAME OF INVENTOR NAME OF INVENTOR

Signature of Inventor Signature of Inventor Signature of Inventor
January 7, 1998
Date Date Date